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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,670	03/29/2001	Seiji Takeuchi	862.C2168	3161

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EXAMINER

KOSOWSKI, ALEXANDER J

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 01/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/819,670

Applicant(s)

TAKEUCHI ET AL.

Examiner

Alexander J Kosowski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

- 1) Claims 1-40 are presented for examination.

Claim Rejections - 35 USC § 102

- 2) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

- 3) Claims 1-11, 13, 16-19, 22-27, 29, and 32-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Saito (U.S. Pat 5,433,785).

Referring to claim 1, Saito discloses a stocker comprising a first sealing member with atmosphere control means for controlling an internal atmosphere of said first sealing member to a first atmosphere (col. 4 lines 44-55), transfer means for transporting an object to be stocked to an exposure apparatus or receiving the object to be stocked from the exposure apparatus without exposing the objects to be stocked to an external atmosphere of said first sealing member, wherein at least one object to be stocked is stocked in said first sealing member (col. 3 lines 63-68 and col. 4 lines 1-68, whereby the reaction chamber is considered an exposure apparatus).

Referring to claim 2, Saito discloses the stocker further comprises a load-lock chamber, and the object to be stocked is transported to outside of said first sealing member or received from the outside of said first sealing member via said load-lock chamber (col. 4 lines 26-31).

Referring to claim 3, Saito discloses atmosphere measurement means for measuring the internal atmosphere of said first sealing member (Abstract, lines 1-5).

Referring to claim 4, Saito discloses that atmosphere measurement means include an oxygen analyzer (Abstract, lines 1-5).

Referring to claim 5, Saito discloses the first atmosphere has an oxygen concentration of not more than 5 ppm at its steady state (col. 4 lines 8-25, whereby the ppm of oxygen could inherently be lowered to any desirable concentration).

Referring to claims 6 and 7, Saito discloses that the first atmosphere includes an inert gas atmosphere and that the inert gas atmosphere includes a nitrogen atmosphere (col. 4 lines 55-60).

Referring to claim 8, Saito discloses a second sealing member inside said first sealing member whereby the object to be stocked is transported to the outside of said first sealing member while stored in said second sealing member (col. 3 lines 63-68 and col. 4 lines 1-7).

Referring to claim 9, Saito discloses that the stocker is connected to the exposure apparatus via a highly airtight transfer path (col. 4 lines 26-31).

Referring to claims 10 and 11, Saito discloses that the atmosphere control means has gas injection means and evacuation means (col. 4 lines 32-51).

Referring to claim 13, Saito discloses transfer means for transporting the object to be stocked to apparatuses for various processes (Abstract, whereby the stocker taught by Saito would inherently have transfer means for moving semiconductors between various processes in a production facility).

Referring to claim 16, Saito discloses the object to be stocked includes a wafer (col. 3 lines 63-66).

Referring to claim 17, Saito discloses a stocker comprising a first sealing member with atmosphere control means for controlling an internal atmosphere of said first sealing member to

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a first atmosphere (col. 4 lines 44-55), transfer means for transporting an object to be stocked to an exposure apparatus or receiving the object to be stocked from the exposure apparatus without exposing the objects to be stocked to an external atmosphere of said first sealing member, wherein at least one object to be stocked is stocked in said first sealing member (col. 3 lines 63-68 and col. 4 lines 1-68, whereby the reaction chamber is considered an exposure apparatus).

Referring to claim 18, Saito discloses a stocker comprising a first sealing member and first atmosphere control means for controlling an internal atmosphere of said first sealing member to a first atmosphere (col. 4 lines 44-55), a second sealing member for storing at least one object to be stocked with second atmosphere control means for controlling an internal atmosphere of said second sealing member to a second atmosphere (col. 3 lines 63-68 and col. 4 lines 1-7), transfer means for transporting the object to be stocked to an exposure apparatus or receiving the object to be stocked from the exposure apparatus while the object to be stocked is stored in said second sealing member without being exposed to an external atmosphere of said first sealing member, wherein the second sealing member which stores the at least one object to be stocked is stocked in said first sealing member (col. 3 lines 63-68 and col. 4 lines 1-68, whereby the reaction chamber is considered an exposure apparatus).

Referring to claim 19, Saito discloses that the stocker further comprises a load-lock chamber and the object to be stocked is transported to outside of said first sealing member or received from the outside of said first sealing member via said load-lock chamber while stored in said second sealing member (col. 4 lines 26-43).

Referring to claim 22, Saito discloses that the first atmosphere has an oxygen concentration of not more than 50 ppm at its steady state and the second atmosphere has an

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oxygen concentration of not more than 5 ppm at its steady state (col. 3 lines 63-68 and col. 4 lines 1-25, whereby the ppm of oxygen could inherently be lowered to any desirable concentration).

Referring to claims 23-24, Saito discloses that the first and second atmospheres include an inert gas atmosphere and that the atmosphere includes a nitrogen atmosphere (col. 4 lines 55-60).

Referring to claim 25, Saito discloses that the stocker is connected to the exposure apparatus via a highly airtight transfer path (col. 4 lines 26-31).

Referring to claims 26 and 27, Saito discloses that the first and second atmosphere control means have gas injection means and evacuation means (col. 4 lines 32-51).

Referring to claim 29, see rejection of claim 13 above.

Referring to claim 32, Saito discloses that the object to be stocked includes a wafer (col. 3 lines 63-66).

Referring to claim 33, Saito discloses a stocker comprising a first sealing member and first atmosphere control means for controlling an internal atmosphere of said first sealing member to a first atmosphere (col. 4 lines 44-55), a second sealing member for storing at least one object to be stocked with second atmosphere control means for controlling an internal atmosphere of said second sealing member to a second atmosphere (col. 3 lines 63-68 and col. 4 lines 1-7), transfer means for transporting the object to be stocked to an exposure apparatus or receiving the object to be stocked from the exposure apparatus while the object to be stocked is stored in said second sealing member without being exposed to an external atmosphere of said first sealing member, wherein the second sealing member which stores the at least one object to

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be stocked is stocked in said first sealing member (col. 3 lines 63-68 and col. 4 lines 1-68, whereby the reaction chamber is considered an exposure apparatus).

Claim Rejections - 35 USC § 103

4) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5) Claims 34-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito as shown above, further in view of Song et al (U.S. Pat 6,487,472).

Referring to claims 34-36, Saito discloses a stocker comprising a first sealing member and first atmosphere control means for controlling an internal atmosphere of said first sealing member to a first atmosphere (col. 4 lines 44-55), a second sealing member for storing at least one object to be stocked with second atmosphere control means for controlling an internal atmosphere of said second sealing member to a second atmosphere (col. 3 lines 63-68 and col. 4 lines 1-7), transfer means for transporting the object to be stocked to an exposure apparatus or receiving the object to be stocked from the exposure apparatus while the object to be stocked is stored in said second sealing member without being exposed to an external atmosphere of said first sealing member, wherein the second sealing member which stores the at least one object to be stocked is stocked in said first sealing member (col. 3 lines 63-68 and col. 4 lines 1-68, whereby the reaction chamber is considered an exposure apparatus). However, Saito does not explicitly teach installing manufacturing apparatuses for various processes in a semiconductor manufacturing factory, manufacturing a semiconductor device in a plurality of processes by

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using the manufacturing apparatus, connecting the manufacturing apparatuses by a local area network, communicating information about at least one of the manufacturing apparatuses between the local area network and an external network of the semiconductor manufacturing facility, nor that maintenance information of the manufacturing apparatus is acquired by data communication by accessing via the external network a database provided by a vendor or user of the exposure apparatus.

Song teaches a semiconductor manufacturing facility whereby various processes including an exposure apparatus are installed and whereby semiconductors are manufactured in a plurality of processes by using manufacturing apparatuses (col. 2 lines 17-23), whereby the manufacturing apparatuses are connected via a local area network and communicate information between the local area network and an external network (col. 7 lines 60-67), and whereby maintenance information is acquired by data communication by accessing via the external network a database provided by a user (col. 8 lines 17-62).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize the semiconductor manufacturing network taught by Song with the stocker apparatus taught by Saito since a networked semiconductor manufacturing facility would allow for easy monitoring of the operation states of various fabrication systems and allow for control of the fabrication systems in case of abnormal operation states (Song, col. 1 lines 59-67).

Referring to claim 37, Saito discloses a stocker comprising a first sealing member and first atmosphere control means for controlling an internal atmosphere of said first sealing member to a first atmosphere (col. 4 lines 44-55), a second sealing member for storing at least one object to be stocked with second atmosphere control means for controlling an internal

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atmosphere of said second sealing member to a second atmosphere (col. 3 lines 63-68 and col. 4 lines 1-7), transfer means for transporting the object to be stocked to an exposure apparatus or receiving the object to be stocked from the exposure apparatus while the object to be stocked is stored in said second sealing member without being exposed to an external atmosphere of said first sealing member, wherein the second sealing member which stores the at least one object to be stocked is stocked in said first sealing member (col. 3 lines 63-68 and col. 4 lines 1-68, whereby the reaction chamber is considered an exposure apparatus). However, Saito does not explicitly teach a semiconductor manufacturing facility comprising manufacturing apparatuses for various processes, a local area network for connecting said manufacturing apparatuses, nor gateway for allowing the local area network to access an external network of said factory, wherein information about at least one of said manufacturing apparatuses is communicated.

Song teaches a semiconductor manufacturing facility whereby various processes including an exposure apparatus are installed and whereby semiconductors are manufactured in a plurality of processes by using manufacturing apparatuses (col. 2 lines 17-23), whereby the manufacturing apparatuses are connected via a local area network and communicate information between the local area network and an external network via a gateway (col. 7 lines 60-67), and whereby information about the manufacturing apparatuses is communicated (col. 8 lines 17-62).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize the semiconductor manufacturing network taught by Song with the stocker apparatus taught by Saito since a networked semiconductor manufacturing facility would allow for easy monitoring of the operation states of various fabrication systems and allow for control of the fabrication systems in case of abnormal operation states (Song, col. 1 lines 59-67).

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Referring to claim 38, Saito discloses a stocker comprising a first sealing member and first atmosphere control means for controlling an internal atmosphere of said first sealing member to a first atmosphere (col. 4 lines 44-55), a second sealing member for storing at least one object to be stocked with second atmosphere control means for controlling an internal atmosphere of said second sealing member to a second atmosphere (col. 3 lines 63-68 and col. 4 lines 1-7), transfer means for transporting the object to be stocked to an exposure apparatus or receiving the object to be stocked from the exposure apparatus while the object to be stocked is stored in said second sealing member without being exposed to an external atmosphere of said first sealing member, wherein the second sealing member which stores the at least one object to be stocked is stocked in said first sealing member (col. 3 lines 63-68 and col. 4 lines 1-68, whereby the reaction chamber is considered an exposure apparatus). However, Saito does not explicitly teach causing a user of an exposure apparatus to provide a maintenance database connected to an external network, authenticating access from the semiconductor manufacturing factory to the maintenance database via the external network, nor transmitting maintenance information accumulated in the maintenance database to the semiconductor manufacturing factory via the external network.

Song teaches a semiconductor manufacturing facility whereby a maintenance database is connected to an external network, access is authenticated via the external network, and maintenance information is accumulated in the maintenance database via the external network (col. 8 lines 17-62, whereby an external user would inherently need to be authenticated to gain access).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize the semiconductor manufacturing network taught by Song with the stocker apparatus taught by Saito since a networked semiconductor manufacturing facility would allow for easy monitoring of the operation states of various fabrication systems and allow for control of the fabrication systems in case of abnormal operation states (Song, col. 1 lines 59-67).

Referring to claims 39-40, Saito discloses the apparatus shown above. However, Saito does not explicitly teach a display, a network interface, a computer for executing network access software allowing maintenance information of the exposure apparatus to be communicated via a computer network, nor that the network access software is connected to an external network of a factory where the exposure apparatus is installed, providing on said display a user interface for accessing a maintenance database provided by a user of the exposure apparatus and enabling obtaining information from the database via the external network.

Song teaches a semiconductor manufacturing facility with a display, a network interface, and a computer for executing network access software (col. 7 lines 61-67, whereby a personal computer inherently contains a display), whereby a maintenance database can be accessed via an external network for obtaining information (col. 7 lines 61-67 and col. 8 lines 17-62).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize the semiconductor manufacturing network taught by Song with the stocker apparatus taught by Saito since a networked semiconductor manufacturing facility would allow for easy monitoring of the operation states of various fabrication systems and allow for control of the fabrication systems in case of abnormal operation states (Song, col. 1 lines 59-67).

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6) Claims 12 and 14-15 and 28 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito, further in view of Sato (U.S. Pat 5,573,891).

Referring to claims 12 and 14-15 and 28 and 30-31, Saito discloses the stocker shown above. However, Saito does not explicitly teach using an F2 excimer laser as an exposure light source, nor that the object to be stocked may be a reticle or that a reticle changer exists for supplying a desired reticle to the exposure apparatus.

Sato teaches an apparatus whereby an excimer laser is used as an exposure light source (col. 10 lines 64-67 and col. 11 lines 1-4, whereby an F2 excimer laser could inherently be substituted for a KrF excimer laser), and whereby reticles are used in the exposure apparatus (col. 50 lines 59-67 and col. 51 lines 1-8, whereby the reticles could inherently be stocked in addition to wafers, and whereby they would inherently need to be changed in order to account for different desired semiconductor patterns).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize the excimer laser and reticles taught by Sato in the invention taught by Saito since this would allow a photochemical reaction to occur between the irradiated area and the etching gas, creating a pattern necessary for manufacturing a semiconductor wafer (Sato, col. 1 lines 63-67 and col. 2 lines 1-11).

Referring to claims 28 and 30-31, see rejection of claims 12 and 14-15 above.

7) Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito.

Referring to claims 20-21, Saito discloses using an oxygen analyzer to measure the internal atmosphere of the second sealing member (Abstract, lines 1-5). However, Saito does not explicitly teach using an analyzer to measure the internal atmosphere of the first sealing member.

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Saito does teach that the first sealing member is evacuated of air in order to control the oxygen inside (col. 3 lines 63-68 and col. 4 lines 1-7).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize an oxygen analyzer to measure the internal atmosphere of the first sealing member as well as the second sealing member since it would be desirable to ensure the oxygen density around the semiconductor wafers is low enough that oxygen leakage does not cause a native oxide film to be formed on the substrate (Saito, col. 1 lines 43-64).

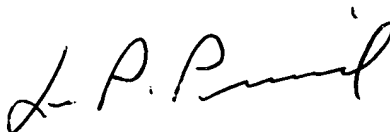
Conclusion

8) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander J Kosowski whose telephone number is 703-305-3958. The examiner can normally be reached on Monday through Friday, alternating Fridays, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 703-308-0538. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7239 for After Final communications. In addition, the examiner's RightFAX number is 703-746-8370.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Alexander J. Kosowski
Patent Examiner
Art Unit 2125



LEO PICARD
SUPERVISORY PATENT EXAMINER
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